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(पहला पुनरीक्षण)

Indian Standard

INLAND VESSELS – WOODEN HATCH COVERS – SPECIFICATION

(*First Revision*)

UDC 692·122·011·84 [674·03]

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

October 1993

Price Group 3

Inland and Harbour Craft Sectional Committee, TE 18

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalised by the Inland and Harbour Craft Sectional Committee had been approved by the Transport Engineering Division Council.

This standard covers the requirements of wooden hatch covers which are intended for protection of holds form penetration of water through cargo hatches on inland vessels.

This standard was originally issued in 1981 and covered two types of hatch covers. The type of cover is chosen by the vessel-owner for each individual vessel, based on navigational conditions and cargo to be carried on the covers, if any. In this revision, Types I and II of the earlier version have been re-designated as Types A and B respectively.

The committee responsible for the preparation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in the standard.

Indian Standard

INLAND VESSELS — WOODEN HATCH COVERS — SPECIFICATION

(First Revision)

1 SCOPE

This standard specifies the general requirements for the design and dimensions of the main elements of wooden hatch covers and also lays down requirements for their fabrication and installation in a vessel.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard.

IS No.	*Title*
226 : 1975	Structural steel (standard quality) (*fifth revision*)
277 : 1985	Galvanized steel sheet (plain and corrugated) (*fourth revision*)
399 : 1963	Classification of commercial timbers and their zonal distribution (*revised*)
7887 : 1975	Mild steel wire rods for general engineering purposes

3 TYPES

The hatch covers shall be of the following two types depending upon the design of the covers and the beams on which they rest:

Type A — Light wooden hatch covers, and

Type B — Reinforced wooden hatch covers

4 MATERIALS

4.1 The materials for the fabrication of hatch covers and its components shall be as given in Table 1.

Table 1 Materials

(*Clause* 4.1)

Sl No. (1)	**Item** (2)	**Materials** (3)	**IS No.** (4)
i)	Cover	Khasi pine or equivalent	399 : 1963
ii)	Cross-pieces carlings of Type A covers	Ash or equivalent	399 : 1963
iii)	Beams for Type B covers	Steel	226 : 1975
iv)	Wedges	Ash or equivalent	399 : 1963
v)	Covering sheets, steel bands, battens and holding down bars for canvases	Galvanized steel sheet and strip	277 : 1985
vi)	Cover handle	Steel bar, dia 10 mm	7887 : 1975

4.2 The timber species shall be seasoned to a moisture content not exceeding 24 percent.

5 GENERAL REQUIREMENTS

5.1 The maximum length of covers and support beams shall be set such that their mass does not exceed the values fixed by the authorities for crew work with hatch covers.

5.2 The seating width of the cover will be as follows:

Type A — not less than 50 mm; and

Type B — not less than 65 mm.

5.3 The ends of the covers of Type B shall be fitted with efficiently secured galvanized steel bands 65 mm wide and 3 mm thick.

5.4 Each cover of Type B shall have two handles placed diagonally opposite at the ends.

6 LOADS

6.1 The magnitude of the design load which the hatch cover may withstand, shall be determined according to the rules of statutory body/classification societies.

6.2 The stress in hatch cover parts when the hatch cover is subjected to its design load shall be not more than the following:

a) In metallic elements: 0·4 of the yield strength, or 0·235 of the ultimate strength of the material, whichever is lower; and

b) In wooden elements : 0·6 of the ultimate strength.

NOTE — The above strength criteria correspond to the dimensions of parts shown in 5, 7.2 and 8.2 and refer to the materials printed in Table 1. When using other materials the strength criteria shall be specified on the basis of the properties of the materials and the mass of the deck cargo.

7 LIGHT HATCH COVERS (TYPE A)

7.1 Design

7.1.1 Type A covers shall be laid on detachable wooden beams resting on longitudinal carlings (*see* Fig. 1).

7.2 Dimensions

7.2.1 The dimensions of the rectangular covers, support beams and other details of Type A covers shall be as shown in Fig. 2.

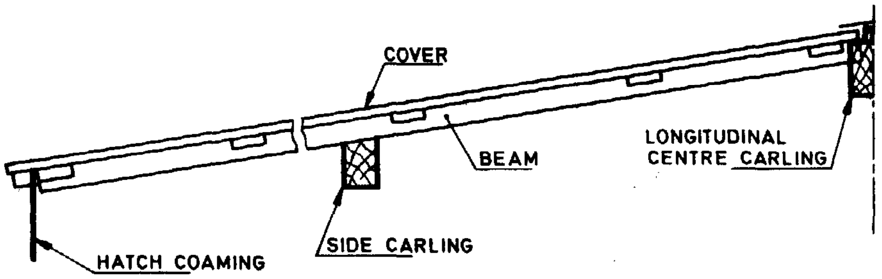
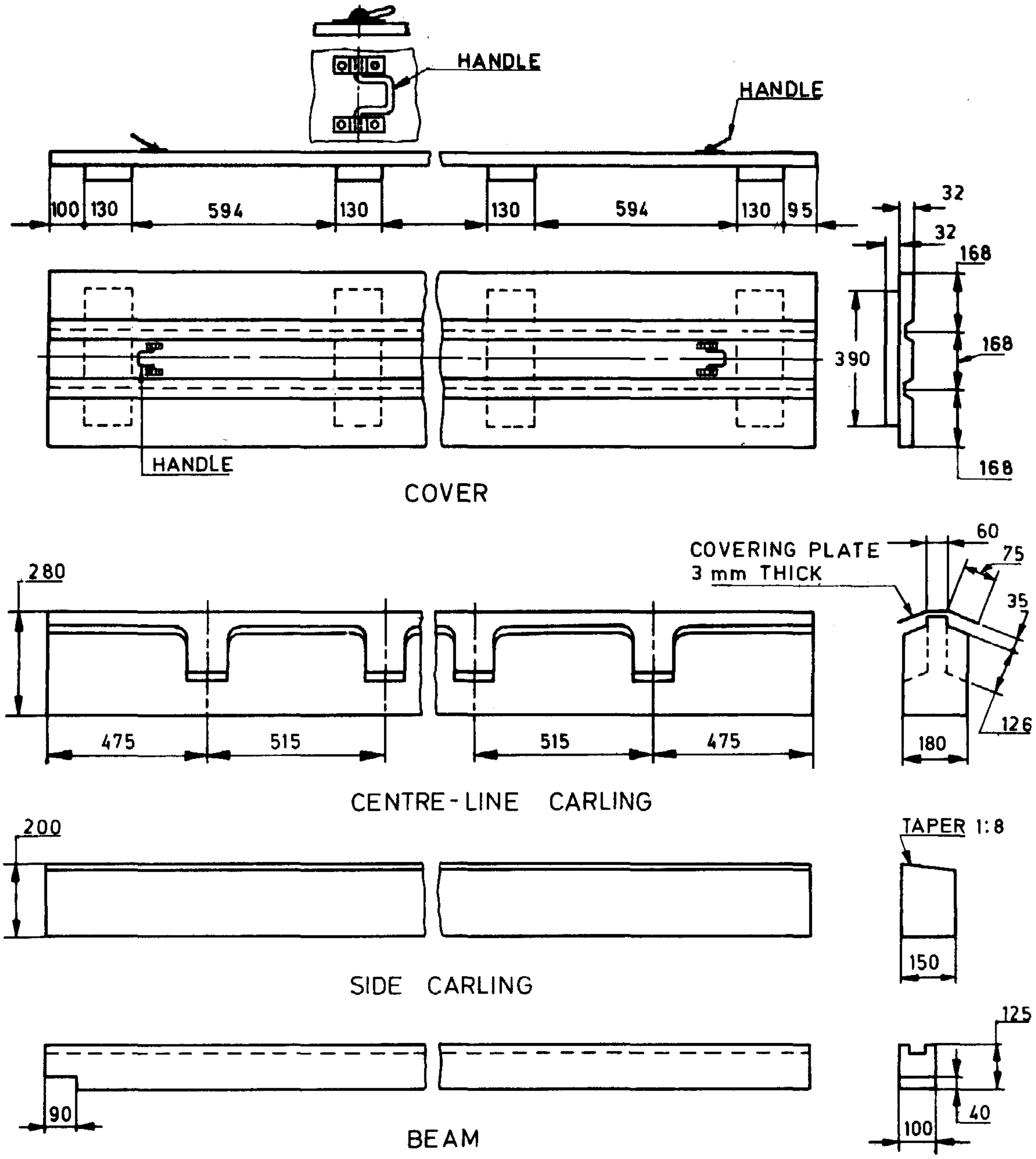


FIG. 1 GENERAL ARRANGEMENT OF TYPE A COVER (CROSS-SECTION)



All dimensions in millimetres.

FIG. 2 DETAILS OF TYPE A COVER AND OF CARLINGS

7.2.2 The shape and dimensions of covers laid in the corners of hatches shall be determined according to the shape of the hatch cut-out.

8 REINFORCED HATCH COVERS (TYPE B)

8.1 Design

8.1.1 Type B covers shall be laid on detachable metal beams (*see* Fig. 3).

8.1.2 The boards forming the cover shall be connected together by not less than three bolts.

8.1.3 The ends of the web plate of the detachable beam shall be reinforced on both sides, over a length of 180 mm with doubling plates having a thickness equal to that of the beam itself.

8.1.4 If covers join a detachable beam, a vertical rib not less than 60 mm high shall be welded to the upper flange of the beam.

8.1.5 The length of the support surface of the carriers into which the detachable beams are laid shall be not less than 75 mm.

8.1.6 The detachable beams shall be fixed in place with a pin of diameter not less than 22 mm, inserted through the sides of the carrier and the beam web.

8.1.7 The pin shall be chained to the beam or to the coaming.

8.2 Dimensions

8.2.1 The principal dimensions of Type B covers and detachable beams shall be as shown in Fig. 4.

8.2.2 To ensure interchangeability, the length of covers shall preferably be 1·5 m and the width 0·5 m. The thickness of the cover shall be 60 mm for a length of 1·5 m.

8.2.3 The thickness of the beam web and the width of the upper and lower flanges shall be not less than the values given in Table 2.

Table 2 Beam Dimensions

(*Clause* 8.2.3)

Span of detachable beam (l), m	3	4	5	6	7	8	9
Web thickness, mm	7	7·5	8	8·5	9	9·5	10
Flange width, mm	150	180	210	240	260	280	300

8.2.4 Maximum dimensions of lightening holes shall be as follows:

Height — not more than 0·4 of the beam side height.

Length — not more than 1·0 of the beam side height.

9 TEST FOR WATERTIGHTNESS

9.1 To ensure the watertightness of cargo hatches covered with wooden covers, the latter shall be covered with one or two canvas covers. If conditions allow hatch covers to be used constantly without canvas covers, the joints between the planks forming the hatch cover shall be sealed with impregnated canvas or an equivalent material.

9.2 The canvas for the covers shall have water repellent impregnation and shall not contain jute yarns.

9.2.1 When tested for watertightness, the impregnated canvas shall not be wetted under a head of 15 m of water acting for 24 hours.

9.3 The canvas covers shall be pressed tightly to the hatch coamings with the help of battens and wedges, for which purpose the coamings or the horizontal stiffeners welded to them shall be fitted with cleats having a width of not less than 65 mm and a thickness of not less than 10 mm.

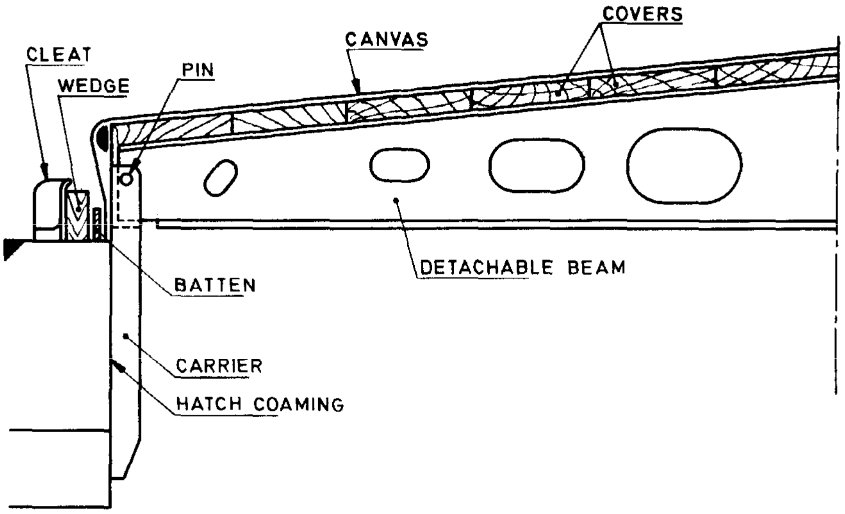
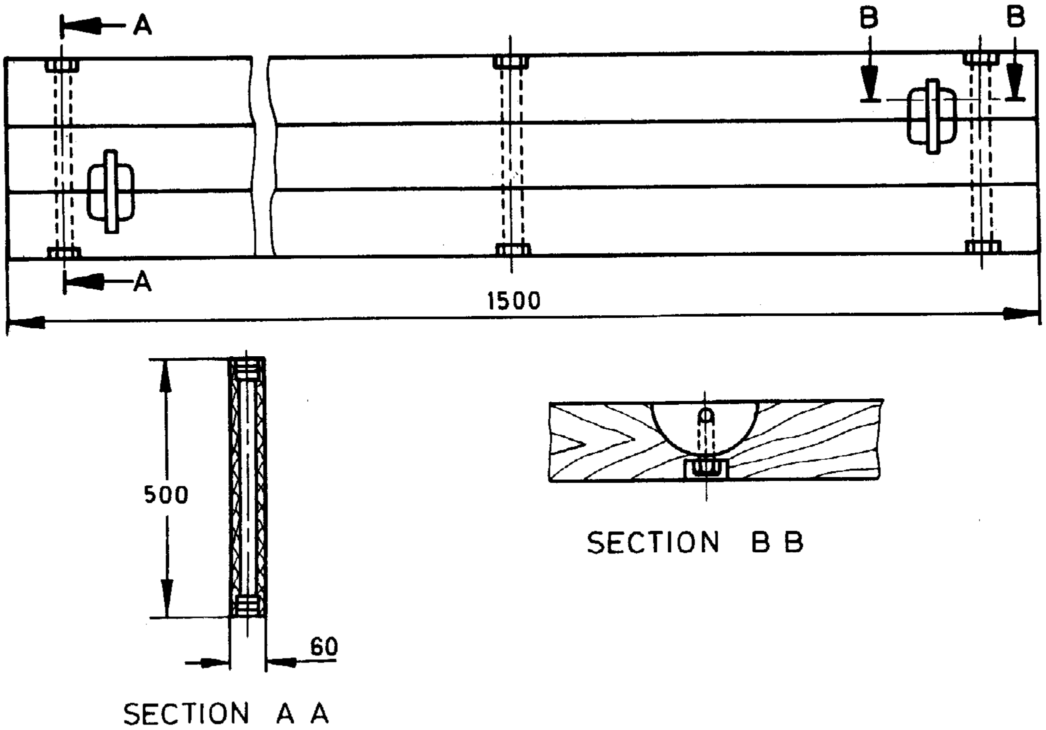
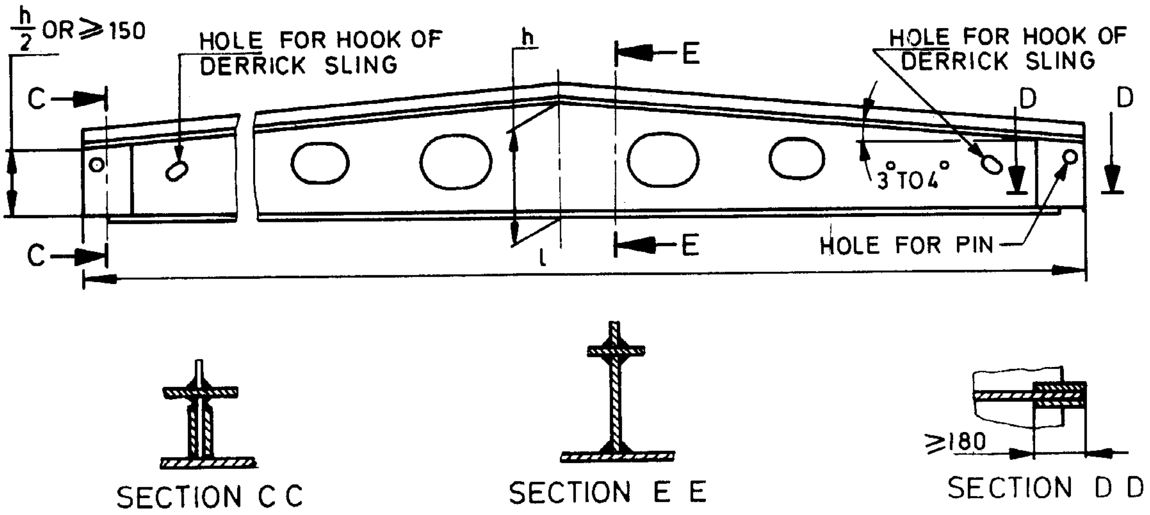


FIG. 3 GENERAL ARRANGEMENT OF TYPE B COVER (CROSS-SECTION)



COVER



DETACHABLE BEAM

FIG. 4 DETAILS OF TYPE B COVER AND DETACHABLE BEAM

9.4 The distance between the centres of the cleats shall be not more than 600 mm, and the distance of the edges of end cleats from the hatch corners not more than 150 mm.

9.4.1 The cleats shall be fitted so that wedges are inserted in the bow-to-aft direction for longitudinal coamings and from the sides to the centre plane for transverse coamings.

9.5 The wedges shall be made of tough wood, with a length not less than 200 mm and a width not less than 50 mm. Their taper shall be not less than 1 : 6 and their thickness at the thin end shall be at least 13 mm.

9.6 To secure each section of the covers in position, steel bars or equivalent device shall be provided for fixing over the canvas covers after they are fastened with battens.

10 MARKINGS

10.1 Wooden hatch covers shall be marked with the following particulars:

a) Source of manufacture;
b) Number of the hatch;
c) Side on which the cover is laid; and
d) Serial number of the cover.

ANNEX A

(*Foreword*)

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Shri S. N. Bassi	Confederation of Engineering Industry, New Delhi
Deputy Chief Surveyor	DG Shipping, Bombay
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Head of Forward Design Cell Head of Standards Cell (*Alternate*)	Mazagon Dock Ltd, Bombay
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Shri N. S. Vijayaraghavan, Director (Transport Engineering)	Director General, BIS (*Ex-officio Member*)

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Director (Transport Engineering), BIS

(*Continued on page 6*)

(*Continued from page 5*)

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